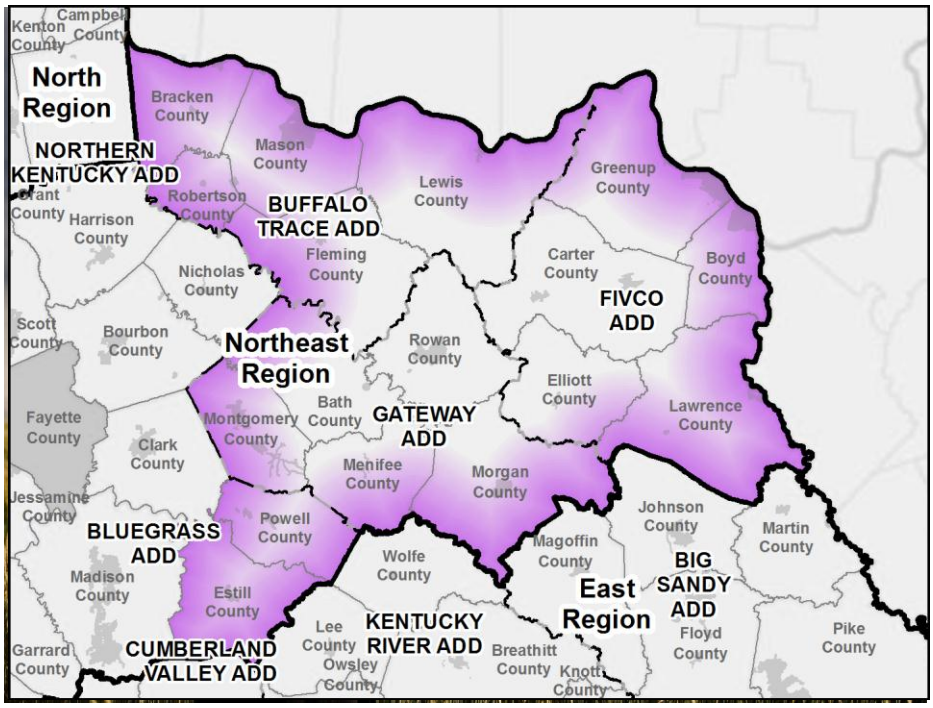
Broadband *KY*

Improving Broadband Access and Utilization for Businesses in Northeast Kentucky

(FIVCO, Buffalo Trace, and Gateway Area Development Districts)



This report is based on input received from FIVCO, Buffalo Trace, and Gateway Area Development Districts and regional stakeholders and was prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

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Prepared for:

Commonwealth Office
of Broadband Outreach and Development
&
Kentucky Northeast Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

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Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been this strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the Northeast region project area (FIVCO, Buffalo Trace, and Gateway Area Development Districts), the regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level.
2. Improving **small business utilization of broadband** to assist in economic development.
3. Improving **competitive broadband services** in industrial parks and commercial clusters.

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and

also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations will be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the timeline in the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1, 7.2, and 7.3.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components within the plan (from Section 8), and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters;
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI**[1] **Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the Northeast Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level --driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[2] by broadband services, as well as in populations that are underutilizing the Internet.

[1] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[2] NTIA definition - *Unserved* and *Underserved:* "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

- Defining a Strategic Framework for Planning
- Assessing the current state of broadband access, adoption and awareness in Northeast Kentucky
- Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

In the case of government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who do not use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, Broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[3] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** the Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** the Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[4]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

[3] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: Northeast Kentucky,*** *(Appendix VII).*
[4] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

5. Current Status: *How is Northeast Kentucky Doing?*

Given the importance of broadband to the current and future health of Northeast Kentucky, its communities, residents and businesses, it is important to assess Northeast Kentucky's situation regarding broadband availability and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in the Northeast Region is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households, and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at Northeast Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "broadband" comes from the National Broadband Map of the National Telecommunication and Information Administration web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the National Broadband Map, the technology must provide a two-way data transmission (to and from the Internet) with advertised speeds of at least 768 kilobits per second (Kbps) downstream and at least 200 Kbps upstream to end users." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second***[5]. For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

TABLE 1: FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

[5] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf (page 3). "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

Table 2: FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and tele-learning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

In its National Broadband Plan of 2010, the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. While current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

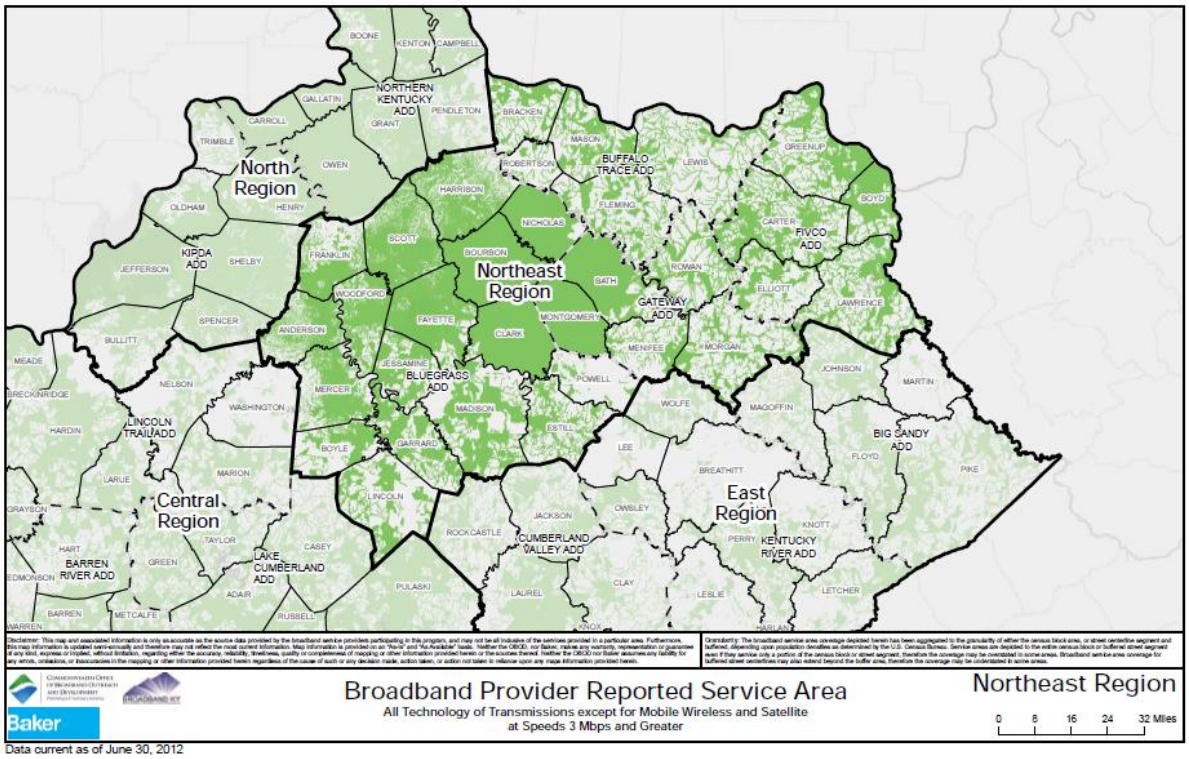
The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online:

http://www.bakerbb.com/kybroadbandmapping/

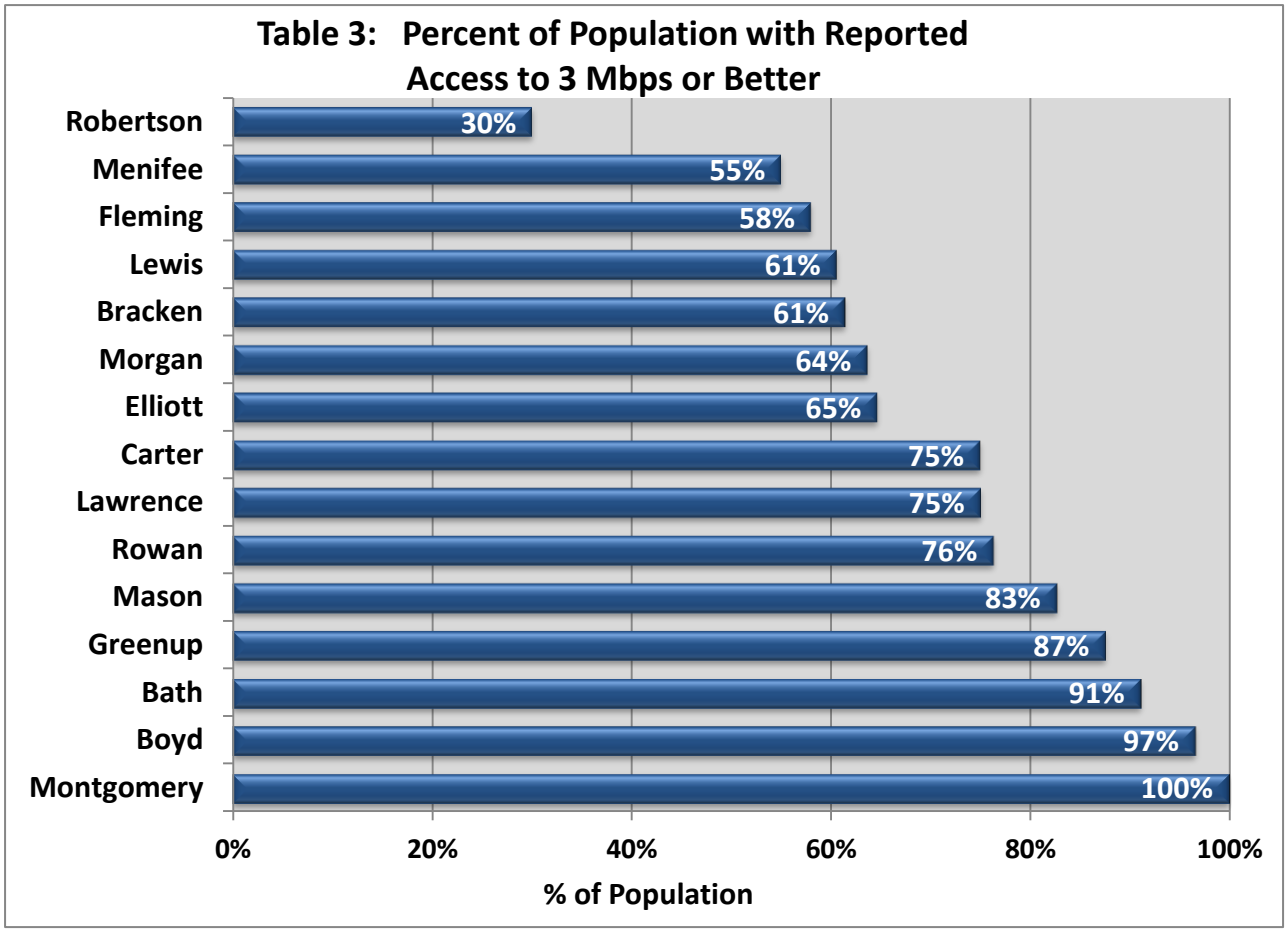
During the broadband planning workshops, participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

According to Kentucky SBI provider data, twelve out of the fifteen counties in the Project Area have less than 90 percent coverage at the target of 4 Mbps. Seven counties have less than 70 percent coverage at this speed. The information provided is current as of January 1, 2013.

Figure 1: Broadband Provider Reported Service Area – 3Mbps or Greater



Data current as of June 30, 2012



Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access

(redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Utilization

Organizations differ in their utilization of broadband and Internet infrastructure. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. The data and analysis contained in the Broadband KY *e*-Strategy Report show that productive use of the Internet is related to the size and density of a community or region, the types of industry sectors that make up its economy, the level of diversification of its economy, and the income, age and education of its citizens.

While there are no national data sets that allow for regional comparisons of Internet utilization, several in-state research efforts have been carried out, including one in 2012 in Kentucky. Results from these various states show a relatively consistent picture of how the digital divide continues to manifest itself once adoption has happened. The benchmarking of Internet utilization in 2012 identified where the digital divide manifested itself in Kentucky.

<u>The key findings were:</u>

- **Internet utilization by organizations** in Northeast Kentucky is moderately lower than the state average (see table, next page).
- There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations in the Northeast Region have low levels of Internet utilization when compared to both larger organizations and to the Kentucky average for small organizations.
- Smaller organizations represent a key opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in the Northeast Region (see table below).

- Organizations outside of metropolitan areas[6] have, on average, significantly lower utilization levels than those in a metro region. Organizations outside of a metropolitan area usually do not benefit from the dense network of supports and a large skilled labor pool.
- Utilization of the Internet by households in the Northeast Region is close to the state average.
- For households, the dynamics of the digital divide in Internet utilization are very similar to those with Internet adoption. Lower Internet utilization is typically associated with households that are lower income, older, less well educated and non-metropolitan. While there is a consistent increase in utilization that tracks increased income, the most dramatic drop in utilization occurs among the oldest age group (those over 65), especially seniors with household incomes under $30,000.

TABLE 4: Share of Labor Force by Size of Organizations

Number of Employees	Northeast Kentucky
1 to 19	87.4%
20 to 49	7.8%
50 to 99	2.7%
100 to 499	1.9%
500 or more	0.2%

Internet Utilization (DEi[7]) by Employment Size: Northeast Region

Organizations by Number of Employees	Kentucky DEi (Median)	Northeast Region DEi (Median)	Sample Size Northeast Region
1 to 4	5.83	4.71	35
5 to 49	6.41	6.16	71
50 to 99	6.8	7.14	15
100 or more	7.38	6.70	13
All Size Ranges	**6.41**	**6.02**	

[6] A metropolitan area is defined by the Census Bureau as having a core urban area of over 50,000 with a population density greater than 1,000 people per square mile. A Micropolitan area has a population of 10,000 to 49,999. A small town has a population of 2,500 to 9,999. The category of "isolated small town" includes the remainder.

[7] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

Lower utilization levels have important impacts on the overall benefits from Internet access by users (household or business) and their communities. Households with higher utilization levels demonstrate higher use activities that produce household income, through both teleworking and home-based businesses. Businesses with high levels of utilization report noticeably higher levels of revenue generation from the Internet.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section has shown that the current situation in Northeast Kentucky falls short of meeting these goals. If Northeast Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	Weaknesses
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential from wireless services (fixed and mobile)	Low density population in unserved rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Fixed and mobile wireless technology Greater provider collaboration Public-private partnerships Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.

- The increased technical capacity of both fixed and mobile wireless have provided some previously unserved or underserved areas with cost effective Internet access.

Weaknesses

- Many of the unserved rural areas in the Northeast region have low population densities and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand landline services in unserved and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing “vertical assets”, fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds. . Kentucky SBI data also shows fixed wireless technology as having the fastest growth in 2012.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the Northeast Region IPA workshop, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, this planning document is designed to assist the Commonwealth with the implementation of the following two goals:

- Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
- Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals in the Northeast Region project area.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives on broadband access, adoption and improved utilization.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to "Unserved" and "Underserved" areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level.
2. **Improving utilization of the Internet by small and medium enterprises**, leading to economic development and related benefits in the region.
3. **Improving access to competitive broadband for commercial enterprises and industrial parks** in the region.

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.***

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Example of Implementation Timeline for Recommendations in Section 7

Approximate Recommendations Timeline						
Recommendations	Month 1	Month 2	Month 3	Month 4	Month 5	Project Duration
Objective 1:						
Initial	Commence at 45-60 Days or Less		Some Require Ongoing Effort			
Short Term			Commence at 2-4 Months or Less		Some Require Ongoing Effort	
Medium Term					Commence at 4 Months or Less	
Objective 2:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less
Objective 3:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less

The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the Northeast Region project area, the Area Development Districts have identified themselves as leaders with organizational capacity to manage the broadband initiative in their region. The ADDs bring the following abilities to the broadband initiative:

- An organizational structure and network of elected officials and stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify unserved and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Build a regional leadership group that draws on the Morehead State Small Business Development Center, Chambers of Commerce, regional Internet Service Providers and other organizations. The regional body will support three working groups for each of FIVCO, Gateway and Buffalo Trace. The three Area Development Districts will provide organizational support and active leadership in harnessing stakeholders, identifying localized needs, and writing proposals for funding. The core groups will expand as interest from other organizations and communities is developed.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to orient them about Broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.

Medium Term Recommendations:

In addition to the above:

f) Organize a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband planning and outreach priorities on broadband for education or through expanded public access.
g) Facilitate a peer-to-peer support group among community leadership;
h) Provide technical assistance on issues related to improving broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

As the project develops, the regional body should consider establishing a sub-committee of Broadband Service Providers. Working with Provider-specific groups builds high-value collaborative and trusting relationships over time. This approach has been proven successful in community programs across the country and has also been instrumental in attracting private capital for network build out.

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

7.2 Improving Small Business Utilization of the Internet

The Northeast Kentucky Working Group identified improvement of small business utilization of the Internet as a priority broadband planning issue for the region. As a starting point, ***this plan defines the scope of the initiative by defining the target group as not only incorporated businesses, but also micro and home-based businesses.*** This more broadly defined group shares the common goal of generating income from for-profit entrepreneurial activities. This group also shares similar challenges of limited financial and human resources as well as specialized skills.

With the goal of improving the level and effectiveness of Internet utilization by small businesses, the following are **recommended strategies** for the Northeast Region:

Recommendations for Improving Small Business Utilization of the Internet

Initial Recommendation:

a) Develop a work plan with tactics that support the region's strategy and includes moderate to high levels of effort depending on the level of energy, commitment and resources available. The work plan should be scalable, and based on integrating new resources and activities recommended in this plan into the current programs and activities of organizations that already support small businesses in Northeast Kentucky. The work plan should address the distinct needs and barriers facing business with only basic Internet skills and those that have more developed skills but still have not adopted the more advanced Internet applications and processes (see section on "programming considerations" for more on this issue).

Short-term Recommendations (to maximize existing resources):

b) Develop and maintain a resources/communications "directory" for the small business community in the project area. This can include local and regional private sector consulting services firms, tech developers as well as regional ISP's.

c) Organize and conduct a series of training workshops or tech "forums" for small businesses in participating communities. The workshops will review barriers and opportunities facing small businesses in their use of the Internet. A brief review of these issues is found in Appendix II. Use the workshops to identify technology challenges for small businesses/entrepreneurs specific to the region with assistance from the Small Business Development Center(s).

Medium-Term Recommendations:

d) Develop on-site training sessions for small businesses, both group and one-on-one.

e) Develop a mentoring program for small businesses, focused on better use of the Internet. Key elements of the mentoring program would include: design of program elements (matching process, mutual expectations, problem solving and impact tracking); recruitment of knowledgeable Internet users willing to act as mentors; outreach to small businesses wishing to link-up with a mentor; and, actively involving Provider/ISP's for participation and support.

f) Organization of an annual conference that highlights Internet Service Providers (ISPs), and Internet applications for business - cloud solutions, training, etc.

7.3 Improving Broadband to Commercial and Industrial Areas

Participants in the planning workshops stated that some industrial and commercial areas in the Northeast Region lack access to competitive broadband. Nonetheless, communities in the region have the potential to develop the leadership and commitment to achieve the broadband they need. A regional body is needed to recruit and organize this potential in a planned and strategic manner.

Many of the strategies and activities needed to address the inadequacies of current broadband services to commercial areas are covered in Appendix I, which provides a detailed process for improving broadband at a local or regional level. ***It is recommended that the leadership group develop its detailed work plan by drawing on this process.***

Prior to developing a detailed work plan, the group should determine the level of fragmentation or concentration of existing and potential demand for advanced Internet services. This task is critical in understanding the level of "effective demand", which forms a critical part of any business plan for enhancing broadband services to these areas. Understanding the geographic footprint of effective demand, as well as the disparity between effective demand and current broadband services, are key steps in the preparation phase described in Appendix I. Completion of this task will also help identify the potential for aggregating demand by geographic area and initiating discussions with Internet Service Providers that can potentially serve that area.

The following are the recommendations for addressing availability of competitive broadband in commercial areas:

Initial Recommendations:

a) Determine standards for competitive broadband, as they would apply to the region. An initial step in defining these standards should include identifying the characteristics of existing and projected broadband services in the areas in and around Lexington. Identification of these characteristics will assist in developing targets for new broadband services to be developed in the region.

b) Leverage Provider participation on the regional and local sub-committee level to discuss availability issues in the project area, to solicit on-going input from the group (recommendations **c** and **d** below), and to begin broadband-specific collaboration with Providers to improve communication and find ways to collectively improve availability.

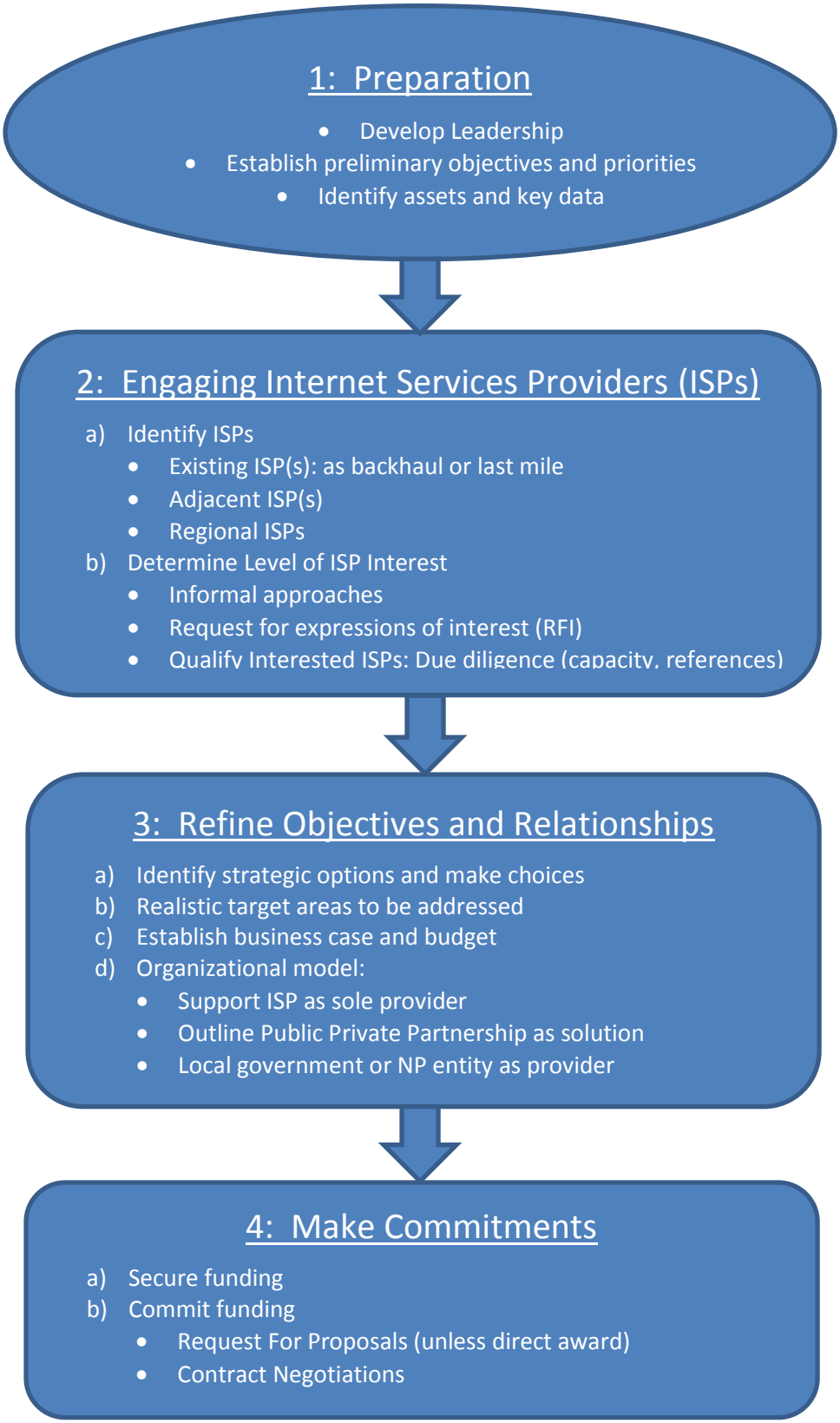
Short-Term Recommendations:

c) Identify the level of fragmentation and concentration of existing and potential demand for advanced Internet services in industrial parks and commercial clusters. Actively aggregate this demand as a key source of information for project leadership, stakeholders, and Providers. This step will include thoroughly assessing existing and potential commercial locations in the project

area, with specific criteria and a template to "inventory" all input in a consistent manner – to build a database and periodically update and grow it for use among all participants in the project area.

d) Based on the findings of the assessment described above, develop actions and tactics that build on the process and activities laid out in Appendix I. The actions should allow for funding and other project contingencies.

The diagram on the following page provides a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified in the diagram are explored in greater detail in Appendix 1.


1: Preparation
• Develop Leadership
• Establish preliminary objectives and priorities
• Identify assets and key data
2: Engaging Internet Services Providers (ISPs)
a) Identify ISPs
• Existing ISP(s): as backhaul or last mile
• Adjacent ISP(s)
• Regional ISPs
b) Determine Level of ISP Interest
• Informal approaches
• Request for expressions of interest (RFI)
• Qualify Interested ISPs: Due diligence (capacity, references)
3: Refine Objectives and Relationships
a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
• Support ISP as sole provider
• Outline Public Private Partnership as solution
• Local government or NP entity as provider
4: Make Commitments
a) Secure funding
b) Commit funding
• Request For Proposals (unless direct award)
• Contract Negotiations

8. Action Plan for Broadband in Northeast Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Leadership Groups (regional and ADD level)	Confirm involvement and level of commitment	ADDs, Chambers of Commerce, Morehead SBDC	Internet Service Providers (ISPs)	1	Establish committees and subcommittees
1b	Secure Funding Sources	Approach potential funders	Regional and local leadership		2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (Community Level)	Recruit new community leaders & stakeholders	ADDs, Chambers of Commerce, Morehead SBDC	Muni government; local individual/ business stakeholders; commercial property owners; members outside of gov., ISPs	1,2	Leaders with focus on competitive commercial Internet services and small business Internet utilization
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	Regional and Add level leadership	K–12 Superintendents & principals; members outside of gov.	2	At least two webinar or face-to-face orientation session
1e	Develop tactics to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives	Regional and ADD level leadership	Local gov. or business contact w/PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting
1f	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband	Regional and ADD level leadership	Morehead SBDC, tech companies/providers	Subject to resources	Community oriented workshops and webinars

		planning and outreach.				
1g	Establish peer support	Facilitate peer support for community leadership	Regional and ADD level leadership	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Functioning community leadership peer group
1h	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	Regional and ADD level leadership	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders

Objective 2: Improving Small Business Utilization of the Internet

Component		What	Initial Leadership	Other Stakeholders and Local Leadership	Month	Outcome
2a	Develop a work plan with tactics that builds on plan's recommendation & strategy	Detailed plan to address needs of small businesses.	Regional body with ADD level and local leadership		2	Agreed course of action with concrete commitments and tasks
2b	Develop and maintain a resources/contact list	Reach out to vendors and resources with invitation to be on regional list	Regional body	Larger firms in area, technology providers, Kentucky Chamber of Commerce.	2, ongoing	Database of information sources and technical advice from vendors and other resources.
2c	Organize & conduct educational presentations and workshops	Local delivery of group sessions to small businesses	ADD level working groups		2 ongoing	Improved use of specific tools or online resources by participating businesses
2d	On-site one-on-one training sessions	Delivery of training activities	ADD level working groups		Subject to resources	Improved use of specific tools or online resources by participating businesses
2e	Develop a mentoring program	Design and implement self-sustaining mentoring	Regional body and ADD level working groups		Subject to resources	Better interaction and improved "network" of business support
2f	Organization of an annual conference	Highlights Internet Service Providers (ISPs) and Internet applications for business - cloud solutions, training, etc.	Regional body with ADD level and local leadership		Subject to resources	Build strategic relationships with tech service Providers and business community

Objective 3: Improving Broadband to Commercial and Industrial Areas

	Component	What	Who	Other Stakeholders & Local Leadership	Begin *(Month)*	Outcome
3a	Determine standards for "competitive broadband"	Research other regions	Regional body	Service providers, property owners, economic development agencies	2 to 3	Definition of "competitive broadband" as applied to the Northeast Region
3b	Leverage the Provider participation on regional and ADD level working groups	*regularly discuss availability issues *solicit on-going input	Regional body and ADD level working groups	Providers with service in project area and others from region	2 & ongoing	*Input on fragmentation and demand aggregation; *collaboration on gaps *review and share SBI coverage data and State/Nationwide trends
3c	Determine fragmentation or concentration of demand	Conduct survey of commercial areas	ADD level	Education sector – students	2 to 4	Documentation of current and future "effective" demand relative to supply
3d	Develop action plan with tactics, along with funding contingencies	* Establish target areas * Establish 1 - 2 initial work areas	ADD level		4	*List of target areas, together with demand/supply data. * Work plan.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Improving Small Business Utilization of the Internet**
3. **Improving Broadband to Commercial and Industrial Areas**

Building local and regional leadership & capacity		
	Metric:	***Data:***
1a	Regional body and ADD level working groups are established and committees defined	• Creation of organizational parameters that define structure, mandate, accountability and membership. • Endorsement of group parameters is affirmed by key stakeholders.
1b	Secure Funding Sources	• Document names, contacts status of funders approached, • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*
1g & h	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact

Improving Small Business Utilization of the Internet		**Data**
2a	Detailed action plan for both low and high levels of efforts	Completion of action plan.
2b	Resources/contact list	Production and circulation of list.
2c	Make educational presentations and workshops	Number of workshops and participants, including communities involved. (# TBD)
2d	Delivered on-site one-on-one training sessions	Number of workshops and participants, including communities involved. (# TBD)
2e	Deploy mentoring program	Establishment of program; number of mentors and participants. (# TBD)
2f	Conduct annual conference	Production of the event; number of participants, providers and small businesses. (# TBD)

Improving Broadband to Commercial and Industrial Areas		**Data**
3a	Defined standards for "competitive broadband"	Written statement on how to define standard of "competitive broadband"
3b	Leveraging Provider participation to regularly discuss availability issues in project area, solicit on-going input from the group on fragmentation and demand aggregation, begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability	• Document provider attendees, info exchanged, etc. • # of availability gaps by commercial area or industrial park • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for target areas projects) and collective provider "work plan" for problem solving
3c	Determination of fragmentation or concentration of demand	Databases with street level data, identifying geographic patterns of target areas and levels of existing and potential demand, as well as current level of service and broadband infrastructure
3d	Action plan with contingencies based on level of resources	Written plan

Impact Metrics

Impact Metrics measure overall benefit on Internet access in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improve broadband adoption and utilization by small businesses**
- **Improve competitive broadband in Commercial Areas**

Improve broadband adoption and utilization by small businesses		Data
1	Documented increase in skills among small businesses in project area	Assessment of skills levels and skills learned: tool to be developed.
2	Documented increase in utilization among small businesses in project area	Survey of participants

Improve competitive broadband in Commercial Areas		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points.

- ✓ ***Begin with needs and goals, rather than solutions*** -- Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and unserved populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [8]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:
   - **Target population or organization(s):** location (topography), number and age of households (rural residential), density, and income/budget.
   - **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
   - **Pole access**: pole owner, pole type, attachment capacity, cost.
   - **Rights of Way** – can be used to expedite/reduce cost of conduit placement
   - **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
   - **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
   - **Land** – that can be used for tower construction/locating points of presence, etc.
   - **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
   - **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.

[8] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government that supports a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in its community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[9]

[9] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:

- By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
- By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for

encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, is market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable and projected revenues will cover expenses. Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.
   - A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
   - Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
   - Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used to attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.

- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:

- ***Aggregating existing demand and purchasing power in the form of guaranteed contracts*** can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

- ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

- ***Funding mechanisms of Kentucky*****:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require the skills to enter into complex contract negotiations with an ISP.

Appendix II - Programming Considerations for Improved Internet Utilization by Small Businesses

By drawing on data on who is struggling to utilize the Internet, business-user motivations, barriers and learning preferences, it is possible to design a broadband utilization initiative that supports local economic development. The key elements to be considered in designing local broadband utilization initiatives may include:

- Increasing awareness among target groups through outreach, assessment, and presentations.
- Providing access to online and off-line resources that address the interests/needs of the target group.
- Providing personalized support in the form of one-on-one counseling, mentoring, and vendor tech events.
- Leveraging local and regional Provider/ISP resources for developing and promoting the power of business internet use though specific ISP "forums".

Initiatives targeting increased Internet utilization by local businesses need to be based on an understanding of how organizations acquire the skills needed to become proficient in "e-solutions"[10]. Research shows that small organizations are likely to feel that there is no skill shortage (even though they are on average lagging larger organizations). The key point is that many ***small businesses need to be made more aware of the potential benefits of the Internet***. Awareness efforts can consist of outreach (electronic or personal), free online assessments, blog messaging, leveraging other social media for push messaging to mobile devices of small business owners, and issue specific presentations where small businesses already participate (Chambers of Commerce).

Once a business has been motivated to explore ways to more productively utilize the Internet, it is important that skill enhancement efforts be designed to fit the skill acquisition preferences of the "student". Larger businesses use hiring of appropriately skilled staff, hiring of external contractors, and training of existing staff. With less financial resources, smaller businesses rely more heavily on training existing staff. ***If small businesses are a main target group, then initiatives need to consider in-service training as a core feature.***

If training existing employees is the preferred method of skill acquisition among small businesses, which learning methods are preferred? Self-directed learning methods are strongly preferred over classroom and even online courses. Access to service vendors, live webinars and in-person sessions are also attractive and emphasize the importance of the "personal touch" to many small business people.

[10] e-Solutions refer to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

The last piece of the design puzzle consists of the content of the learning opportunities. Much of the material on the Internet is targeted at individual consumers and usually relates to generic digital literacy and rarely deals with business applications. Moreover, those Internet resources targeted at businesses are highly fragmented and often consist of higher end services targeted at larger businesses. If utilization efforts are to be effective they need to speak to issues facing their target group.

Broadband KY's Benchmarking Research in 2012 indicates[11] that there are at least two distinct sub-groups that could be targeted with broadband utilization initiative: the novices and the experienced but not yet sophisticated. The novices have adopted the Internet but are still learning the basics (or have been stuck using only the most basic applications). The more experienced group has adopted many Internet applications but wants to learn more, especially in areas that promise to have a tangible impact on their business. ***For the novices, priority should be given to "quick and easy wins" -- applications and activities that are quick and relatively easy to adopt, such as:***

- ***research;***
- ***electronic document transfer;***
- ***accessing government information;***
- ***building a basic website; and***
- ***Purchasing goods and services online.***

It is notable that there is a strong linkage between the "easy to adopt" processes for businesses and those Internet based activities that households are most likely to adopt early. Therefore, developing skills within households is beneficial to businesses.

Activities and applications of potential interested to the more experienced user would include:

- ***teleworking, selling online, and online commerce;***
- ***delivering services or content online;***
- ***Advanced website with rich media or service creation.***

Quick to adopt / adoption rates		Slow to adopt / adoption rates	
Research by staff	91.8%	Teleworking	34.4%
Electronic document transfer	91.8%	Selling goods or services	34.4%
Access government information	85.0%	Deliver services or content	20.8%
Web site	81.7%	Rich media or service creation[12]	18.0%
Purchasing goods or services	79.2%		

It is also recommended that learning materials and opportunities address the number one barrier cited by all businesses: concern over security and privacy.

[11] **Broadband KY e-Strategy Report,** May 2012, pages 25 to 28.

[12] Rich media describes Web pages that use advanced technology such as streaming video, downloaded programs that interact instantly with the user for advertising.

Appendix III: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Local Government Economic Development Program (LGEDP) -- http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) – Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency –
Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY **...**,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280

NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center (TATRC)**, located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity

The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix IV: Contributors to this Plan

This Plan was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for Northeast Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the Northeast Kentucky region's project area, consisting of the FIVCO, Buffalo Trace, and Gateway Area Development Districts, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix V - IPA Workshop Meeting Notes: Northeast Region

October 30th, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the Northeast Region of Kentucky, focusing on ***Northeast Kentucky (Buffalo Trace, Gateway and FIVCO Area Development Districts)***. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff.

Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. He also summarized the challenges Kentucky faces in Broadband adoption and utilization. Having Broadband available to homes and businesses does not ensure it is being used effectively to improve the way people live and businesses work. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine what goals and objectives for the region.

Jason Boggs then presented the Northeast Region Working Group's Scope of Work (SOW) document. Boggs explained that in looking at the data for the area, it became clear that there was a real opportunity to address utilization among small businesses. Subsequently, the group began working with the SBDC through Morehead State University to determine what the needs of small businesses may be. This process is ongoing, but the group would like to create a plan that addresses the needs of small businesses in the area through educational methods suited to the businesses.

Bill Bates then provided technology and trending information relating to regional broadband availability, project goals, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy informed the group that the goals for the day's workshop would be creating a vision, goals, and strategies for achieving those goals, with an action plan for implementation.

The group took a break and re-convened for a working lunch/group discussion regarding identifying and solving the broadband needs of small businesses in the area. Some key discussions included:

a) Chambers of Commerce (COC) have had a good experience and turn out for face-to-face businesses training workshops when training has a specific topic. Having business people present the training classes works better than a college type class, due to experience of the business people.

b) Morehead Small Business Development Center (SBDC) noted that most folks come in for help on short term issues – not long term. It is hard to get folks involved in proactive/long term efforts.

c) SBDC thought efforts to reach small businesses would be more effective if they provided ROIs on implementation of internet applications.

d) COC and SBDC have some different objectives, but they do work together.

e) Non-urban areas typically don't have access to computer support services. Discussion on building a list of computer/IT vendors that can provide cost effective and personal help support and education. It was mentioned that Commonwealth government may have IT contractors that would have an interest in this as well.

f) The ADD Business Service Coordinators (BSC) could possibly help with internet support. The BSCs already know and communicate with SBs.

g) Availability of broadband doesn't always translate into customers/users.

h) Chamber representatives are seeing small businesses that need higher-priced Internet packages to do the processes they would like to adopt. Small businesses could benefit from a guide that helps them determine what they need in a broadband connection.

i) The provider's role would be in promoting use of internet and helping ADDs/Counties in this effort. Providers are willing to participate in BB promotion efforts.

j) Provide Educational Instructional resources for general dissemination, but also provide personal touch. May want to consider some sort of on-line help resource. Place where SBs can also share lessons learned and other knowledge.

k) A mentorship program is needed but must be sustainable. In order to entice participation of mentors, there must be an incentive in place to justify small business owners spending the time to participate.

l) Affordability is the # 1 issue in region – low income. This also the top issue for Small Business, who can't find the start-up funds.

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the Northeast Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the Northeast Region will be presented at the Final Planning Session (FPS) workshop in February to stakeholders--for final discussion, amendment and adoption. The draft plan will begin to

develop an action plan for implementation with specific goals, objectives, tasks, timelines and responsibilities. If any areas are not completely addressed in the draft plan, they will be finalized at the Final Planning Session workshop with stakeholders.

1. There was agreement that the regional Broadband initiative should focus on providing means/tools that build on current resources

2. The 4 directions for this group to focus on are:
    - Provision of training for small businesses, both in person and online.
    - Development of mentoring for small businesses.
    - Organization of an annual conference that highlights Internet Service Providers (ISPs), and Internet applications for business -- cloud solutions, training, etc.
    - Develop and maintain a resources/contact list for live help for small businesses.

3. The Strategic plan will consider inclusion of leverage complementary elements that support the regional effort:
    - Demand Aggregation (Business)
    - Business Surveys
    - Regional Community Anchor Institutions (CAI ‘s) -- identification & inventory,
    - Wi-Fi Hot-Spot Strategies

4. Connected to the above, the plan will provide input for developing the stakeholder leadership needed to build capacity for sustaining the ongoing efforts over time.

5. Funding is a critical component to the Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort

Appendix VI - Project Area Scope of Work

Name of Region Northeast **Name of Project Area** SME/Entrepreneur Utilization

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Increase awareness of the benefits of Broadband for econ. development 2. Increase meaningful utilization among small/medium enterprises
Project Area Boundaries	Boundaries for this Project Area: Gateway ADD, FIVCO ADD, Buffalo Trace ADD
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Training organizations and supporting agencies for SMEs in FIVCO/BT/Gateway/parts of Bluegrass ADDs
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Small business adoption and use, particularly for business growth 2. Public Access/Availability to broadband
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. Jason Boggs, Gateway ADD 2. Gail Wright, Gateway ADD 3. Kevin Cornette, Buffalo Trace ADD 4. Amy Kennedy, Buffalo Trace ADD 5. Sherry McDavid, FIVCO ADD 6. Kelly Ward, FIVCO ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Jason Boggs
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Conf Call/buy-in consensus Monday 11 am

** If additional space is required, please attach additional pages to this template. **

Approved: May 31, 2012 - KY Broadband Central Planning Session Jason Boggs
Project Area Working Group Chair

Project Area Focus

- FIVCO, Buffalo Trace, and Gateway ADDS
- Focus: training and supports for existing and new small businesses to enhance their Internet utilization through increased digital literacy.

Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports. Special attention will be provided to the following areas:

a) Identify predicted level and characteristics of low utilization by small businesses.
b) Identify main barriers to adoption and utilization, as well as preferred means of acquiring Internet skills.
c) Identify opportunities for increased utilization by small businesses.

Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

Stakeholders Recruitment

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be recruited

A. Utilization by SMEs
   - Agencies supporting small businesses, especially those with a training mandate
   - Local governments
   - Chambers of Commerce and organizations assisting SMEs

Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within the focus area: small business utilization
d) Priority setting
e) Identification of general strategies for dealing with priority issues.

Appendix VII - Project Area Profile: Northeast Kentucky

This section provides a profile of Internet utilization in the Northeast Region, consisting of ***Buffalo Trace, Gateway and FIVCO Area Development Districts***. Data and analysis does not include the Bluegrass Area Development District unless explicit noted.

For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of Northeast Kentucky.

Figure 1: Demographic and Economic Profile

Households	Northeast	Kentucky
Population	276,014	4,339,367
Median Household Income	$34,381	$40,061
% in Poverty	24.6%	18.4%
% of Population 65+	14.9%	13.3%
Organizations		
Establishments	4,918	90,511
Employment	54,689	1,480,658
Annual Payroll (in billions)	$1.62	$51.44
Average Size of Employer	11.1 employees	16.4 employees
USCB County Business Patterns 2009		

The Northeast region has below average (median) income and an older age profile compared to the State. At 18.7% of employment, the retail sector plays a large role in the Northeast region. The manufacturing sector is also important providing 15.1% of employment. The eight largest industries, ranked by annual payroll, that collectively represent over 84% percent of all jobs and payroll in Northeast Kentucky are:

Figure 2: Largest Economic Sectors in Northeast Kentucky (excluding Bluegrass)

Rank	Industry Sector		Percent Employment	
1	Retail Trade		18.7%	
2	Manufacturing / Processing		15.1%	
3	Accommodation & food services		10.7%	
4	Health Care & Social Assistance		10.6%	
5	Other services (exc. public admin)		4.1%	
6	Construction		3.2%	
7	Wholesale Trade		3.2%	
8	Finance & Insurance		2.7%	
		% Employment	84.2 %	
% of Payroll	83.2%	% of Establishments	72.4%	

Figure 3: Age Profile of Northeast Kentucky (excluding Bluegrass)

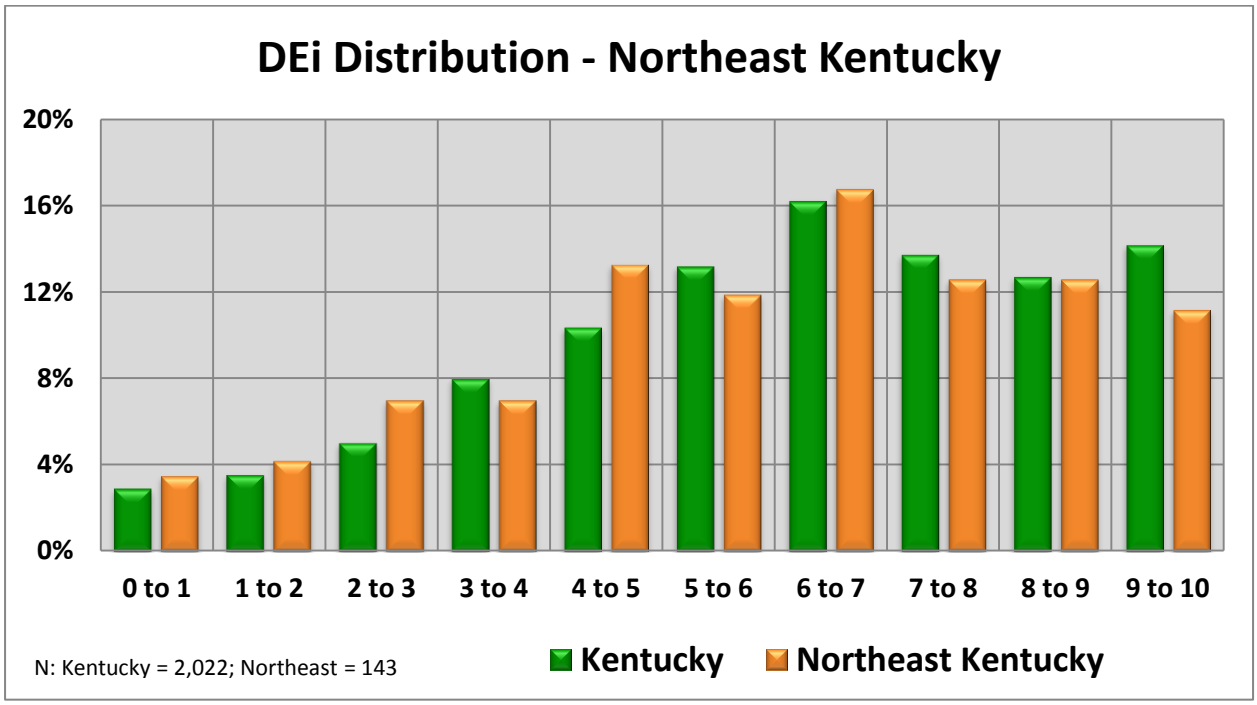
Age Distribution of Adults	Northeast	Statewide
18 to 34 years	21.1%	22.6%
35 to 49 years	20.7%	20.7%
50 to 64 years	20.5%	19.8%
65 years and over	14.9%	13.3%

Utilization by Organizations in Northeast Kentucky

Internet utilization by organizations in Northeast Kentucky is moderately lower than the state average. The overall Digital Economy Index (DEi) for Northeast Kentucky is 6.02 compared to the statewide DEi of 6.41. The profile of utilization levels from low (1) to high (10), mimics statewide patterns.

Median DEi Score		
Kentucky	Northeast Kentucky	Ranking by Region
6.41	6.02	N/A

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: Northeast Kentucky

Organizations by Number of Employees	Kentucky DEi (Median)	Northeast Kentucky DEi (Median)	Sample Size
			Northeast Kentucky
1 to 4	5.83	4.71	35
5 to 49	6.41	6.16	71
50 to 99	6.8	7.14	15
100 or more	7.38	6.70	13
All Size Ranges	**6.41**	**6.02**	

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in Northeast Kentucky.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	Northeast Kentucky
1 to 19	87.4%
20 to 49	7.8%
50 to 99	2.7%
100 to 499	1.9%
500 or more	0.2%

It is very informative to look at where which industry sectors in Northeast Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within Northeast Kentucky** (inclusive of the Bluegrass Area Development District) in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
Northeast Kentucky	• ***Manufacturing*** • ***Financial & Insurance***	• Retail Trade • Wholesale Trade

The following table summarizes utilization for major industries within Northeast Kentucky (according to DEi scores) and compared to the state average, as well as the region's ranking among the five regions. This table includes data for the Bluegrass Area Development District because data sets are too small for just the Buffalo Trace, Gateway and FIVCO Area Development Districts.

Figure 8: Summary of Utilization (average DEi) Levels by Industry Sector (including Bluegrass)

Major Industry Category	Statewide	Northeast Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7.79	**1**
Information	6.9	6.83	**3**
Educational Services	6.7	6.77	**2**
Manufacturing / Processing	6.6	7.35	1
Retail Trade	6.4	6.01	**5**
Other services (exc. public admin)	6.3	6.69	**1**
Professional & Technical	6.2	6.42	**2**
Wholesale Trade	6.2	5.85	**4**
Construction	5.8	6.21	2
Health Care & Social Assistance	5.7	5.69	**4**
Public Administration	5.2	5.19	**3**

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for Northeast Kentucky (inclusive of Bluegrass), grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential. In Northeast Kentucky, areas that have the great's gaps in utilization, while also being growth sectors, are: retail trade (the region's largest sector) and Wholesale Trade.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	Northeast Region Variation from State Average	Sector Size - Rank within Region	Growth Expectation
Retail Trade	**-0.34**	**1**	↑
Manufacturing / Processing	**0.78**	**2**	↑
Health Care & Social Assistance	**-0.04**	**3**	↑
Wholesale Trade	**-0.38**	**5**	↑
Professional & Technical Services	**0.18**	**6**	↑ ↑
Construction	**0.37**	**7**	↑ ↑
Finance & Insurance	**0.32**	**11**	
Information	**-0.07**	**12**	↓
Public Administration	**0.01**	**n/a**	
Gap 1 (0.6 or more below the state DEi)	**0**		
Gap 2 (0.6 to 0.3 below statewide DEi)	**2**		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in Northeast Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited.

Figure 10: Barriers to Adopting Internet Applications and Processes (excluding Bluegrass)

Barriers to e-Solutions - % Saying Important	North	Statewide
Privacy concerns	70.8%	71.4%
Available Internet is too slow	63.8%	59.2%
Lack of internal expertise and knowledge	51.5%	45.8%
Suppliers not ready	46.9%	41.5%
High cost of development/maintenance	41.5%	45.8%
Loss of personal contact with clients	39.2%	45.1%
Security concerns	37.7%	28.7%
Internal organization resistance	30.0%	24.6%
Uncertain about benefits	26.9%	28.7%
Products not suited to Internet sales	20.0%	24.9%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in Northeast Kentucky were more modest at 13.5 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises (including Bluegrass)

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
Northeast Kentucky	3,310	371	50	13.5%	98
Kentucky	15,657	1,731	593	34.3%	401

Households in Northeast Kentucky

Utilization of the Internet by households in the Northeast Kentucky is very close to the state average. The overall Digital Economy Index (DEi) for households in Northeast Kentucky is 6.15 compared to the statewide DEi of 6.1.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Median DEi Score	Rank	Difference from Average	Households in Sample
Northeast Kentucky	6.15	**N/A**	+0.05	408
Statewide	6.1			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to household utilization in Northeast Kentucky. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups. With a slightly older and significantly less affluent population, it is somewhat surprising that Northeast Kentucky has households with average computer skills and average utilization.

Figure 13: Impact of Age and Income on Internet Utilization (excluding Bluegrass)

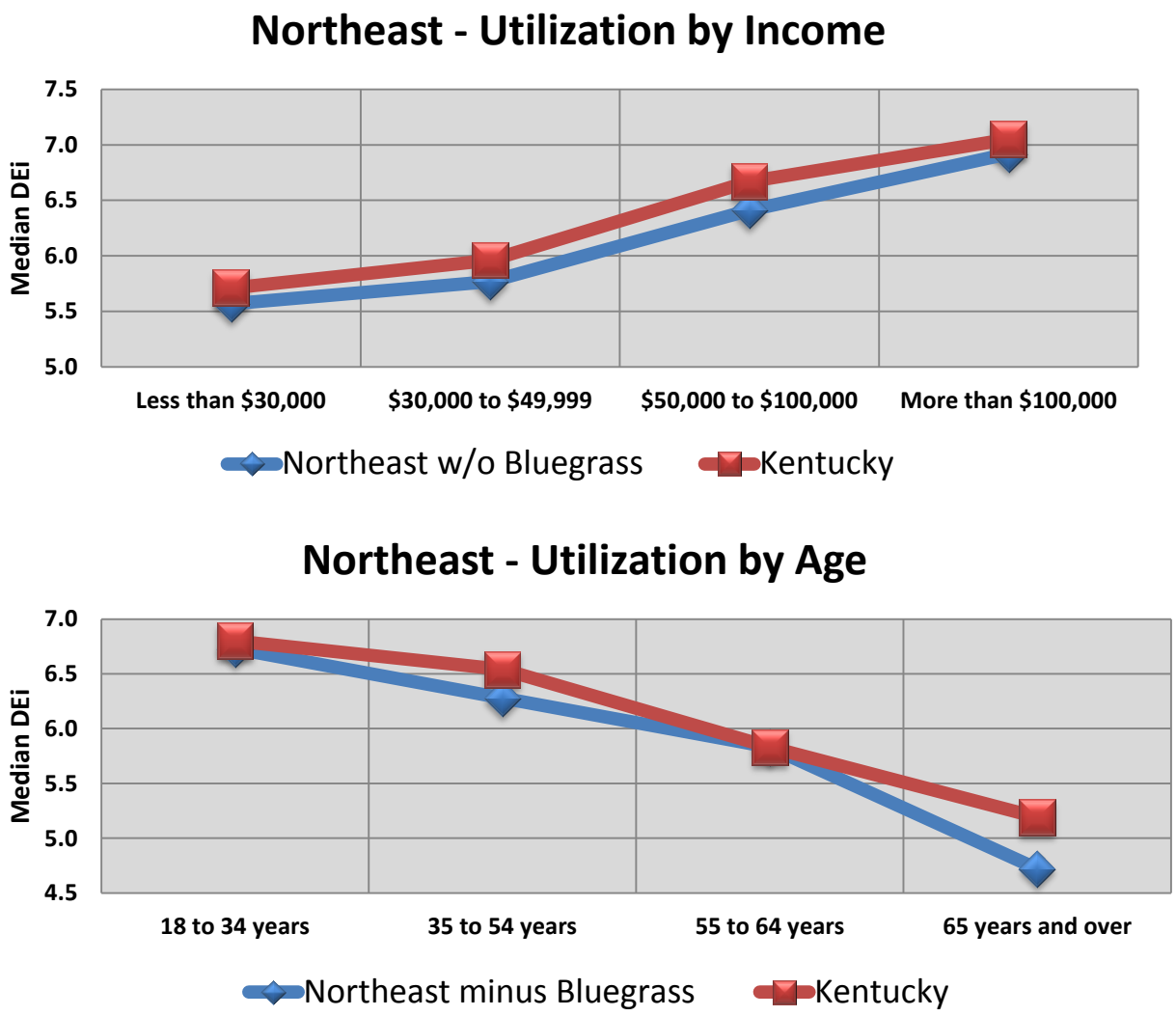
Northeast Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**5.62**	**6.99**	**6.87**	**7.07**
35 to 54	**5.12**	**5.94**	**6.17**	**6.83**
55 to 64	**5.85**	**5.24**	**6.18**	**6.56**
65 years and over	**5.24**	**3.83**	**4.45**	**5.29**

Figure 14: Computer Skill Levels (excluding Bluegrass)

	Expert user	Use computers confidently	Know the basics
Northeast Kentucky	24.3%	62.9%	12.5%
Statewide	25.6%	59.9%	14.1%

For Northeast Kentucky, 12.5 percent of households "know only the basics" in computer skill. Northeast Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Northeast Internet Utilization Levels by Age and Income (excluding Bluegrass)



Use of Internet for Productivity

In terms of productivity, households in the Northeast region show above average utilization for work oriented activities, including teleworking, training, and accessing their work place from home.

Figure 16: Percentage of Households Using the Internet for Productivity (excluding Bluegrass)

Northeast Kentucky	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	52.0%	55.6%	-3.6%
Home business	19.6%	20.8%	-1.2%
Teleworking	19.3%	20.8%	-1.5%
Education or training	48.8%	45.9%	+2.9%

Focus on Project Area Priorities

The Northeast Region has identified small business utilization of the Internet as their priority focus. This profile provides some insights into the performance of small medium enterprises (SMEs). Readers should keep in mind that the sample sizes for SMEs that participated in the survey are relatively small and should be used with caution. Nonetheless, the data on this priorities areas is suggestive and worth consideration.

As seen in Figure 18, small businesses (with 1 to 19 employees) in the Northeast Region have significantly lower utilization of Internet applications and processes when compared to their peers elsewhere in Kentucky. The gap is even larger when compared to businesses of all sizes across Kentucky. Part of the lower utilization levels can be attributed to the composition of the small business sample in the Northeast compared to the rest of state. The Northeast sample has a higher percentage of its responses from the Health and Social Services sector (which generally has low levels of utilization) and a relatively low number of responses from the Professional and Technical Services sector (which has high levels of utilization).

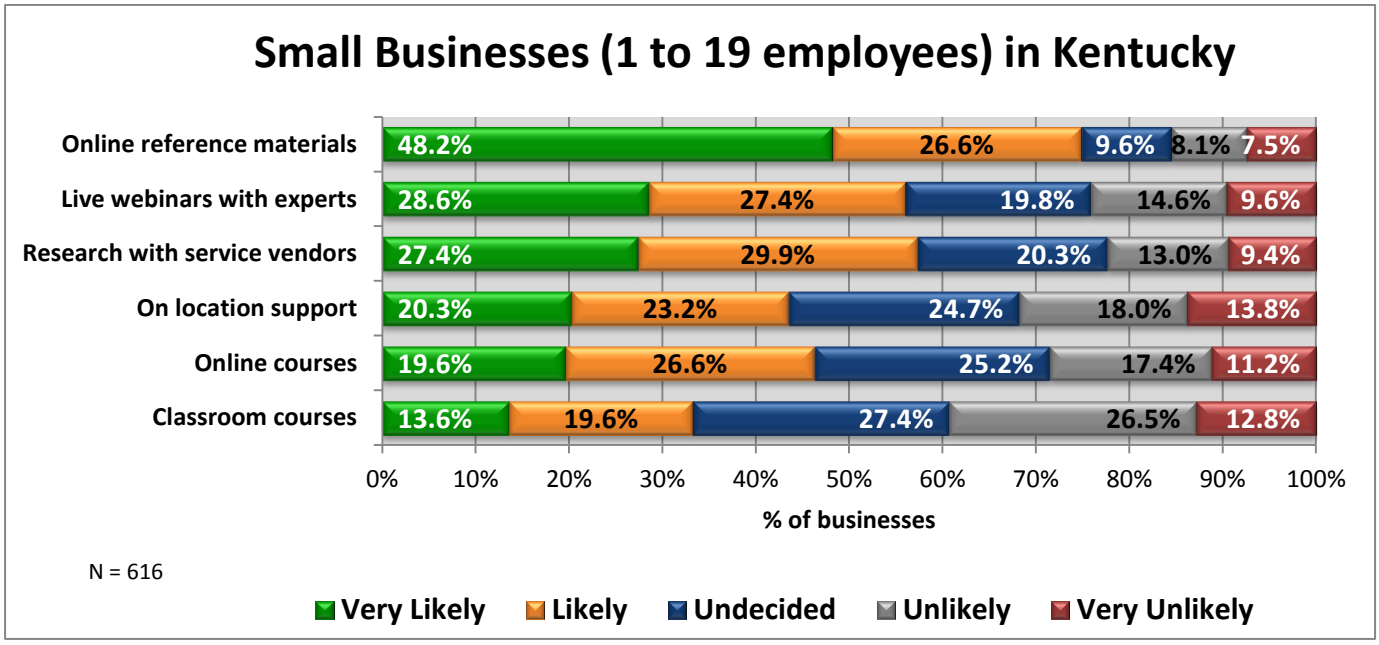
Figure 17: Percent of Commercial Organizations Using Specific Applications and Processes

% Currently Using Applications and Processes	Northeast Businesses with 1 to 19 Employees	Kentucky Businesses with 1 to 19 Employees	Kentucky Businesses All Sizes
Median DEi	4.47	6.31	6.60
Electronic document transfer	86.2%	84.8%	86.9%
Research by staff	79.3%	85.2%	86.2%
Purchasing goods or services	72.4%	84.3%	84.1%
Web site for organization	55.2%	75.8%	78.1%
Access government information	69.0%	78.8%	80.6%
Supplier communication and coordination	65.5%	73.8%	77.9%
Banking and financial	62.1%	73.0%	72.5%
Customer service and support	51.7%	65.2%	67.2%
Staff training and skills development	62.1%	60.3%	65.4%
Social networking	51.7%	64.1%	64.0%
Accessing collaborative tools	51.7%	59.5%	63.5%
Advertising and promotion	37.9%	59.6%	62.3%
Government transactions	51.7%	60.6%	61.7%
Selling goods or services	27.6%	53.6%	54.8%
Teleworking	31.0%	39.9%	45.7%
Rich media or service creation	27.6%	42.2%	44.4%
Deliver services and content	27.6%	35.2%	38.7%
Sample Size	35	808	1182

Nonetheless, the difference is utilization levels is large and suggests an underlying pattern within the small business sector in the Northeast. Figure 18 identifies in which applications and processes Northeast small businesses are lagging. Most notable are: business website; customer services; advertising and promotion; selling goods and services; and rich media or service creation[13]. The areas where small businesses in the Northeast are lagging are also those areas most closely tied to revenue generation. Consequently, adoption of these applications and processes provide a significant opportunity.

In examining how small businesses in the Northeast can take advantage of this opportunity, it is worth noting that staff training is one area where small businesses in the Northeast out-perform their state-wide peers. There appears to be interest and willingness to address the performance gaps through training. Survey data show that providing online resources is the preferred choice for acquiring new skills and knowledge. Least preferred are formal courses, either in classrooms or online.

Figure 18: Preferred Learning Methods



Another promising area for exploration with small businesses would be the potential of using cloud solutions to address gaps in utilization. While Northeast businesses reported lower than average use of cloud solutions, this weakness has the potential to become an opportunity.

Figure 19: Percent of Businesses that Currently Use Cloud Solutions

Size and location	% of Businesses	Sample Size
Northeast Businesses with 1 to 19 employees	24.1%	29
Kentucky Businesses with 1 to 19 employees	31.3%	729
Kentucky Businesses All Sizes Ranges	34.5%	1,059

[13] Rich media describes Web pages that use advanced technology such as streaming video, downloaded programs that interact instantly with the user for advertising.

Appendix VIII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of

applications currently being used by an organization or household, a composite score is calculated that summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Commonwealth of Kentucky Office of Broadband Outreach and Development

Baker

strategic networks group
the broadband economists